



**Bureau of Land Management
Casper Field Office**

**Pioneer Oil & Gas Emigrant Gap No. 1 Federal Well
Environmental Assessment - WY-060-EA08-038**



View of staked well site looking west towards the Goose Egg Inn and Bessemer Mountain.

**Prepared by James A. Bauer
April of 2008**

INTRODUCTION

The proposed well is located about 4.5 miles southwest of Paradise Valley, Wyoming, on the north side of Highway 220 between Goose Egg Inn and Emigrant Gap Ridge. The proposed well is located at the conjunction of the southeast end of Emigrant Gap Ridge with the west end of Casper Mountain about one mile north of the northwestern end of Jackson Canyon (see topographic map 1 and the cover photo). Oil and gas operators have previously drilled only one (1) well within a nine (9) square mile area of the proposed well (Table #1).

Wells within 9 square miles		
Moffat #1 State	NENE Sec. 36, T. 33 N., R. 81 W.	P&A – 11/30/1955
Table #1		

DESCRIPTION OF THE PROPOSED ACTION

Pioneer Oil and Gas has submitted an application for permit to drill (APD) the Emigrant Gap #1 Federal well located in Lot 12 (SW¼SW¼) (1,193' FSL & 881' FWL) of Section 6, T. 32 N., R. 80 W., on Federal oil and gas lease WYW158024. Pioneer Oil and Gas will construct a 200' by 240' well pad (1.1-acres) to accommodate the drill rig and will construct about 2,271 feet of new access road to get to the well site from Highway 220. Pioneer Oil and Gas plans on using the approach to the wildlife viewing area north of Highway 220 as their starting point for the proposed access road (see photo #2). To date, WYDOT has only granted Pioneer Oil and Gas a temporary permit to use this approach for access for drilling and completion purposes as well as using it for maintenance purposes (WYDOT Letter in Appendix A). Pioneer Oil and Gas has not secured a permanent approach from WYDOT in the event they successfully complete the well as a producing oil well (WYDOT Letter in Appendix A). If the well is productive, the applicant plans on installing production facilities on the well pad including three 400 barrel production tanks, one 400 barrel water tank, and one 6 by 20 treater. The final placement of the production facilities depends on receiving an Access Permit from WYDOT.



Photo #1: View of staked well site on the west side of Emigrant Gap Ridge.



Photo #2: View of approach to the wildlife viewing area off of Highway 220. The applicant proposes to use this approach as the starting point for the access road to the well site. The well site is located right of the trees in the upper right of the photograph.

NEED FOR THE PROPOSED ACTION

Pioneer Oil & Gas needs to drill the proposed well to test the oil and gas potential of Federal oil and gas lease WYW158024. This oil and gas lease had an effective date of June 1, 2003, and an expiration date of May 31, 2013.

CONFORMANCE WITH LAND USE PLAN

The proposed action is subject to the Casper Resource Management Plan approved in December of 2007. The Casper Field Office (CFO) has reviewed the plan and the proposed action conforms to the land use plan terms and conditions as required by **43 CFR 1610.5**. The referenced document is on file at the CFO.

Federal oil and gas lease WYW158024 has the following special lease stipulations. It has a controlled surface use stipulation where surface occupancy or use within ¼-mile of the Oregon Trail may be prohibited or restricted. It has a timing limit stipulation (TLS) from February 1st to July 31st to protect raptor nesting habitat. It has a TLS from November 1st to March 31st to protect Bald Eagle feeding concentration areas. It has a TLS from November 15th to April 30th to protect big game crucial winter range. It has a no surface occupancy (NSO) stipulation that applies to portions of the lease within ¼-mile of the North Platte River and an NSO stipulation that applies to the portion of the oil and gas lease within the Jackson Canyon Bald Eagle Winter Roost, portion of the lease south of Highway 220.

Based on Lease Notice 1 attached to the lease, surface use or occupancy may be strictly controlled or prohibited within ¼-mile of an occupied dwelling. The proposed well site is located within ¼-mile of an occupied dwelling (see photo #3 below). The dwelling is located on the south side of Highway 220 across from the well site and is owned by Jack Johnson, Jr. He submitted a letter to the Casper Field Office on December 7, 2004 (Appendix D), indicating that he did not have any objections to the location of the proposed well site. Pioneer Oil and Gas requested an exception from this standard lease provision on December 7, 2004 (Appendix D).



Photo #3: View of Johnson's dwelling from the proposed well site.

RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

This environmental assessment was prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA), and the analysis conforms to the provisions of the Energy Policy Act of 2005.

Authority for the proposed action and alternatives is contained in the Mineral Leasing Act of 1920, as amended, and the regulations in 43 CFR 3100.

ALTERNATIVES

Moving the Well Site

The applicant could move the well location to a different location on the oil and gas lease since Federal lease WYW158024 contains 1,071.27-acres and comprises Lots 3 – 8, Lots 10 - 16 and the SE $\frac{1}{4}$ of Sec. 6 and Lots 1, 2, 5, 6, 13, and 14, and the W $\frac{1}{2}$ NE $\frac{1}{4}$ of Sec. 7 of T. 32 N., R. 80 W., as well as Lots 3 and 4 and the SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 31 of T. 33 N., R. 80 W.

Pursuant to 43 CFR 3101.1-2 (surface use rights), the lease rights granted provide that relocation of proposed operations are not moved more than 200 meters. In this case, the opportunity to move the well is limited. In addition, a large portion of the lease is not available for surface development due to steep slopes in excess of 25% (area of the lease south of Highway 220 on Casper Mountain and portion of the lease along Emigrant Gap Ridge – see Figure A) or is contained in areas where there is an NSO, Jackson Canyon Bald Eagle Winter Roost and $\frac{1}{4}$ -mile of the North Platte River. Because of these constraints, the oil and gas lease has approximately 200-acres which are available for surface development, the SW $\frac{1}{4}$ SW $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, and NW $\frac{1}{4}$ SE $\frac{1}{4}$ of Sec. 6. In addition, moving the well to another site will likely increase environmental impacts since the proposed well site is located immediately north of Highway 220. Representatives of the CFO and representatives for Pioneer Oil and Gas along with the surface owner, Stacie Scott, conducted onsite inspections of the proposed well sites and alternative production facility locations on November 8, 2004, March 28, 2005, and April 29, 2008, and have located the well site and access road to minimize surface disturbance and other impacts. As a result, this document will not further address this alternative.

Moving the Production Facilities

The operator could move the proposed production facilities, heater-treater, storage tanks, etc. to a different location. They have selected two sites for possible offsite storage and processing – Site A in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 2, T. 32 N., R. 81 W. (See Figure A below & photo #4) and Site B in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 6, T. 32 N., R. 80 W. (see photo #5 & #6)

Site A

This location is situated off of the oil and gas lease. This office conducted an onsite of the pipeline route and production facility site on March 28, 2005. Pursuant to 43 CFR 3101.1-2, surface use rights, a lessee shall have the right to use as much of the leased lands as is necessary to explore for, drill for, mine, extract, remove, and dispose of all the leased resource subject to (1) the stipulations attached to the lease, (2) non-discretionary statutes, and (3) any **reasonable measures** as may be required by the Authorized Officer to minimize impacts to other resources. To the extent consistent with lease rights, such **reasonable measures** include (1) modification to placing or design of facilities, (2) timing of operations, and (3) specification of interim and final reclamation. At a minimum, reasonable measures are considered consistent

with lease rights granted provided they do not (1) require relocation of proposed operations by more than 200 meters; (2) prohibit surface disturbing operations for a period in excess of 60 days in any lease year; and (3) or require that operations be sited off the leasehold. Based on these regulations, the CFO does not consider locating the production facility at Site A a reasonable measure/alternative. In addition, Pioneer Oil and Gas would have to install almost two (2) miles of pipeline to get their production from the well site to Site A. As a result, this document will not further address this alternative.

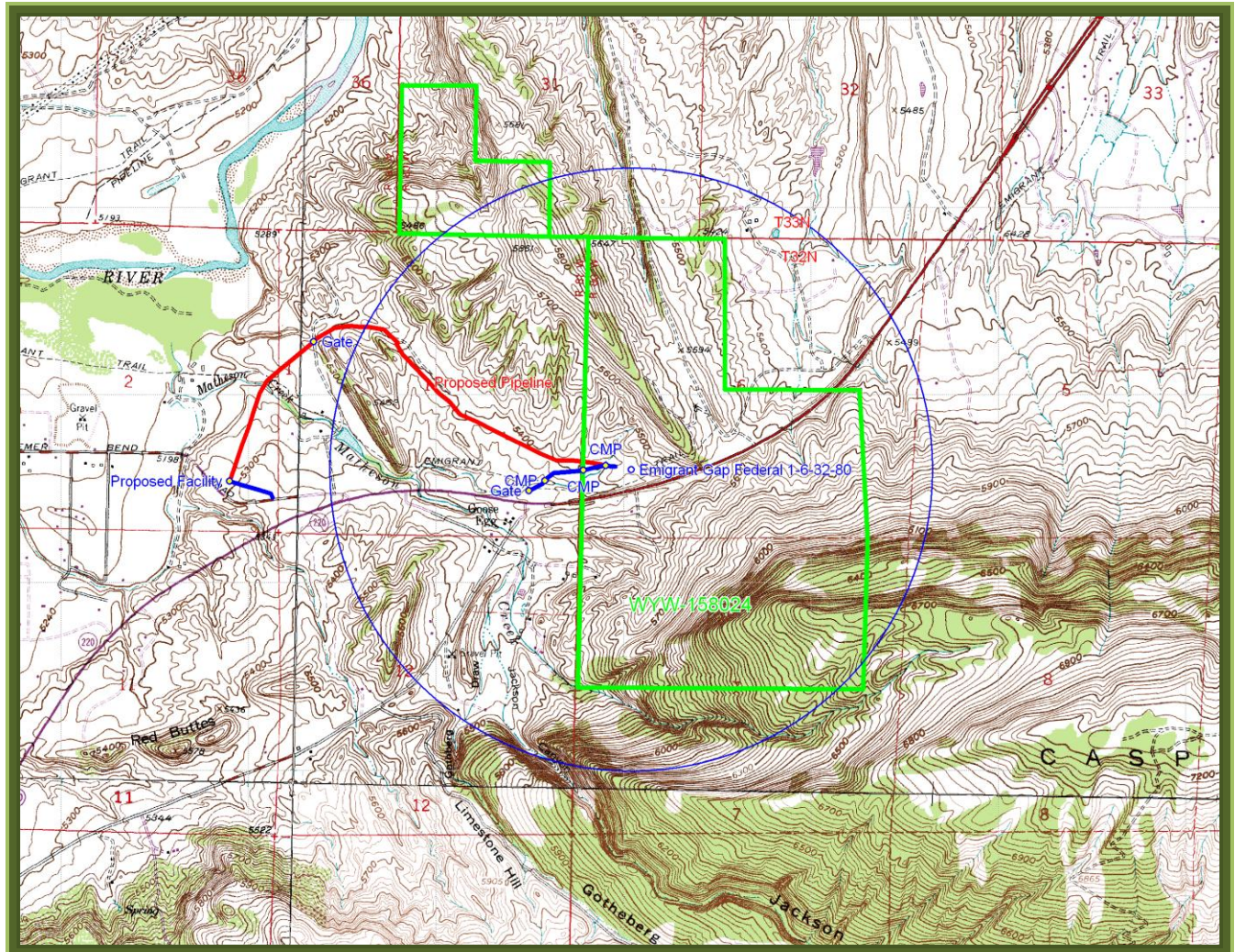


Figure A: Topographic Map showing alternate production facility site in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Section 2, T. 32 N., R. 81 W. along with the pipeline route (in red).



Photo #4: View of Alternate Production Facility Site in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ of Sec. 2, T. 32 N., R. 81 W.



Photo #5: Overview of Alternative Production Facility Site B (marked by arrow) in the NE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 6, T. 32 N., R. 80 W.

Site B

This site is located on the lease but is dependent on WYDOT granting Pioneer Oil and Gas a permanent approach permit off of Highway 220. This document will discuss the impacts of this alternative.



Photo 6: View of existing road from Highway 220 that Pioneer Oil and Gas would use to access the Alternate Production Facility Site B.

No Action

The CFO would deny the APD under this alternative; but, the oil and gas lessee/operator has the right to access their lease and drill for and develop the oil and gas resources subject to any lease stipulations and/or any stipulations or restrictions which the CFO places on the action at the time of approval of the APD. Therefore, the CFO does not consider denying the APD a valid option; and as a result, this document will not further address this alternative.

THE AFFECTED ENVIRONMENT

The critical elements of the human environment and whether or not they would potentially be affected by the proposed action are listed in Table 2.

Element	Status on EA Area	Addressed in EA
Air Quality	Potentially Affected	Yes
Areas of Critical Environmental Concern	None Present	No
Cultural Resources	Not Affected	Yes
Farmlands (prime or unique)	None Present	No
Floodplains	None Present	No
Native American Religious Concerns	Not Affected	No
Threatened and Endangered Species	Not Affected	Yes
Wastes (hazardous or solid)	Not Affected	No
Water Quality	Not Affected	Yes
Wetlands/Riparian Habitat	None Present	No
Wild and Scenic Rivers	None Present	No
Wilderness Concerns	None Present	No
Environmental Justice Concerns	Not Affected	No
Nonnative Plants/Invasive Weeds	Potentially Affected	Yes
Wildlife	Potentially Affected	Yes
Paleontology	Not Affected	No
Recreation	Not Affected	No
Range Management	Affected	Yes
Visual Resources	Affected	Yes
Vegetation	Affected	Yes
Soils	Affected	Yes
Table 2 - Critical Elements of the Human Environment		

Soils

Map 2 displays the affected soil units and Table #3 below contains a brief soil description for each soil unit. The proposed well pad and a portion of the access route occur on clay & clay loams belonging to the Delpain-Rock outcrop complex (see photo 5 below). A portion of the access road also occurs on clay soils belonging to the Middlewood-Kather clay loams and loamy sand belonging to the Orpha loamy sand complex.



Photo #5: View of well site in front of Mowry Shale rock outcrop by trees.

Soil Units		
Name	Slope	Description
Brownsto-Lupinto complex (#137)	6 to 40%	Cobbly to gravelly loam on ridges and hills. Subject to slight wind erosion and severe water erosion. Plant community consists of bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, threadleaf sedge, prairie junegrass, and black sagebrush.
Delpain-Rock outcrop complex (#171)	3 to 30%	Channery clay, clay loam, and rock outcrop on dip slopes. Subject to moderate wind erosion and severe water erosion. Plant community is the same as unit #137.
Fiveoh-Thermopolis association (#182)	6 to 30%	Loam on hills and alluvial fans. Subject to moderate wind erosion and moderate to severe water erosion. Plant community is the same as unit #137.
Keyner-Absteds-Slickspots complex (#209)	0 to 6%	Sandy clay loam and slickspots on alluvial fans and low terraces. Subject to moderate wind erosion and slight water erosion. Plant community consists of western wheatgrass, bluebunch wheatgrass, mutton bluegrass, blue gramma, and big sagebrush.
Middlewood-Kather clay loams (#220)	6 to 30%	Clay loam on dip slopes. Subject to moderate to severe water erosion and moderate wind erosion. Plant community consists of western wheatgrass, bluebunch wheatgrass, bottlebrush squirreltail, mutton bluegrass, winterfat, prairie junegrass, Sandberg bluegrass, and big sagebrush.
Neldore-Moyerson-Rock outcrop complex (#224)	10 to 30%	Clay, clay loam, and rock outcrop on ridges and hills. Subject to moderate wind erosion and severe water erosion. Plant community is the same as unit #220.
Redsun-Rock outcrop (#243)	15 to 30%	Channery loam and rock outcrop on dip slopes. Subject to severe water erosion and slight wind erosion. Plant community consists of juniper, bluebunch wheatgrass, needleandthread, big sagebrush, and mountain mahogany.
Rock outcrop-Ustic Torriorthents, shallow-Rubble land complex (#256)	30 to 100 %	Subject to severe water erosion. Colluvial boulders and stone accumulations and standstone ledges and escarpments. Virtually free of vegetation.
Rubble land-Ustic Torriorthents, boulder, complex (#267)	20 to 60%	Rubble land and boulder ustic torriorthents on hillsides. Subject to severe water erosion. Plant community consists of bluebunch wheatgrass, needleandthread, thickspike wheatgrass, bottlebrush squirreltail, and juniper.
Theedle-Shingle-Kishona complex (#283)	6 to 40%	Clay loam and loam on hills dissected by gullies. Subject to severe water erosion and moderate wind erosion. Plant community is the same as unit #137.
Table #3		

Cultural Resources

John Albanese conducted a Class III inventory on all areas of potential effect associated with the proposed well pad and access road on May 23, 2005. He identified two sites and an isolate. The two sites include an historic road bed associated with an old route of Highway 220 and the Oregon Trail. The Casper Field Office determined that the historic road bed was not eligible for the National Register and that the Oregon Trail was located outside the potential area of effect. John Albanese also conducted a Class III inventory on all areas of potential effect associated with the alternative production facility, Site A, and did not located any cultural sites. Alternative production facility, Site B, has not been surveyed for cultural materials. If the CFO chooses this alternative, a cultural inventory would be needed prior to any disturbance or construction. This document will not further address this resource.

Water Quality

The proposed well site is located immediately south of an ephemeral draw that runs into Matheson Creek. Matheson Reservoir is one mile east of the proposed well site. There are

numerous water wells and springs within one mile of the proposed well which property owners use for stock and domestic purposes. The water wells range in depth from 5 feet to 470 feet. See Table #4.

Springs & Water Wells		
Permit #	Location	Depth
P43166W	SWNW Sec. 5, T. 32 N., R. 80 W.	330'
P12109P	NWSW Sec. 5, T. 32 N., R. 80 W.	470'
P35794W	NENE Sec. 6, T. 32 N., R. 80 W.	Angela Springs
P144355W	NENE Sec. 6, T. 32 N., R. 80 W.	66'
P60745W	NWNE Sec. 6, T. 32 N., R. 80 W.	120'
P14291W	NENW Sec. 6, T. 32 N., R. 80 W.	Spring
P60734W	SWSW Sec. 6, T. 32 N., R. 80 W.	80'
P5187P	NWNW Sec. 7, T. 32 N., R. 80 W.	5'
P103796W	NWNW Sec. 7, T. 32 N., R. 80 W.	5'
P42440W	NENE Sec. 12, T. 32 N., R. 81 W.	12'
P106960W	NENE Sec. 12, T. 32 N., R. 81 W.	200'
P92189W	NWNE Sec. 12, T. 32 N., R. 81 W.	48'
P37534W	NWNE Sec. 12, T. 32 N., R. 81 W.	307'
P80473W	SENE Sec. 12, T. 32 N., R. 81 W.	12'
P80873W	SENE Sec. 12, T. 32 N., R. 81 W.	12'
P111371W	SWNE Sec. 12, T. 32 N., R. 81 W.	165'
P111372W	SWNE Sec. 12, T. 32 N., R. 81 W.	110'
Table #4		

Livestock/Range Management

Eagle Ridge Ranch Company owns the surface in the vicinity of the well site and uses it for the purpose of grazing cattle and horses from May 1st thru October 31st. Based on the grazing lease file which cover public lands in the vicinity of the proposed well site, between four (4) and six (6) acres are necessary for one animal unit month (AUM) in this area.

Vegetation

Table #3 above describes the potential plant community in the area of the proposed action.

Visual Resources

The proposed action is located in a Visual Resource Management (VRM) area that the CFO has categorized as VRM Class III. Please see Appendix A and the VRM assessment. Under this VRM objective, the level of change to the characteristic landscape should be moderate and the activity may attract the attention but should not dominate the view of the casual observer.

Wildlife

The project area lies within a portion of two big game herd units (see Map 3). The project area is within delineated crucial big game winter range for the Bates Hole/Hat Six Mule Deer Herd Unit (757). According to the WGFD, this herd unit is currently approximately 32% below the population objective of 12,000 animals. Management issues identified for this herd unit include: hunter access to private and land-locked public lands; increasing mineral development and the

associated impacts of habitat fragmentation; and the impacts of extended drought on range conditions (WGFD 2006).

The project area is within the Medicine Bow Pronghorn Antelope Herd Unit (525). According to the WGFD, this herd unit is currently at the population objective of 60,000 animals (WGFD 2006). Management issues identified for this herd unit include; declining habitat conditions due to extended drought.

The project area also provides habitat for numerous raptor species. Some of the species that have been observed through anecdotal observations in the area include: Ferruginous Hawk, Bald Eagle, Golden Eagle, Red-tailed hawk, Swainsons Hawk, American Kestrel, Merlin, Burrowing Owl, and Prairie Falcon. Presently, there are two documented raptor nests within ½ mile of the project area (see Map 3). There is no current data regarding occupancy.

In addition to the wildlife discussed above, a variety of non-game wildlife including several species of songbirds, small mammals, and predators occur throughout the area.

WY BLM Sensitive Species

Bald Eagles are frequent visitors through the project area. The proposed well location lies between the Jackson Canyon Bald Eagle Roost and delineated foraging habitat along the North Platte River. The well site is approximately 1/8 mile north of the Jackson Canyon ACEC boundary established to protect the eagle roost (see Map 3). No Bald Eagle nests are known to occur in the vicinity of the project area. 2006 winter roost count monitoring recorded a high of 102 bald and golden eagles utilizing this roost. Roost counts conducted over the last five years consistently document between 40-60 eagles. Presently, the Jackson Canyon roost is believed to support the highest densities of eagles in the state.

A black-tailed prairie dog colony is present in areas along the periphery of the proposed well location where suitable soils and topography are present to allow colonization. This colony has not been mapped, but it is estimated to be approximately 5 acres.

T&E Species:

The project area was evaluated for the presence of all Federally Threatened, Endangered, Candidate, and proposed Species as identified on the USFWS species list dated August 2007. Based on field visits to the area and a review of historical data, no threatened or endangered species are believed to occur within the project area. Water depletions to the Platte River system were evaluated for the following downstream species: Whooping crane, Interior least tern, Piping plover, Pallid sturgeon, and Western prairie fringed orchid (USFWS 2007). Pioneer Oil and Gas estimates that they will use approximately .6 acre feet of water for drilling the well from the City of Casper. Consequently, water use will have "May Effect" on the above listed species and consultation with the USFWS is required. The CFO completed this consultation on April 23, 2008.

The State Engineer's Office made a determination that the water supply source is an "existing depletion. Pioneer Oil and Gas entered into a Wyoming Platte River Recovery Agreement with the State of Wyoming and the United States Fish and Wildlife made a determination that the project will not jeopardize the federally endangered whooping crane, interior least tern, and pallid sturgeon or the federally threatened northern Great Plains piping plover or the western prairie fringed orchid (see letters in Appendix B).

ENVIRONMENTAL IMPACTS

Soils

Proposed Action

Impacts: The proposed action will cause about 2.7-acres of new surface disturbance as a result of constructing the well pad and access road. Impacts to soils from the proposed action would occur in two stages: 1) soil loss during construction and 2) soil loss due to erosion on disturbed surfaces after construction operations cease.

Direct impacts to soils would include modification of texture, particle size distribution, chemical properties, and biological content due to compaction and stockpiling. Soils would be compacted by vehicles during construction activities reducing infiltration, increasing runoff, and increasing soil loss due to water erosion. Stockpiling would breakdown the structure and organic matter in the soil and would reduce the soils viability over time.

Based on the nature of the soils in this area, water erosion would cause most of the soil loss. Soil would also be lost via air-borne dust caused by vehicles driving to the well sites and on disturbed areas during dry field conditions.

Irreversible and irretrievable commitment of resources: Some soil will be lost during construction activities. Additional soil will be lost due to increased erosion over the disturbed areas until successful reclamation. Soil will be lost in the form of wind blown dust due to vehicles traveling to the well site especially when there is a high volume of traffic during drilling and completion activities.

Mitigation Measures: Most of necessary mitigation measures to minimize impacts to soils are included in the surface use plan which accompanied the APD. The CFO is also recommending the following additional mitigation measure. If field conditions are dry, water or magnesium chloride water or some other form of dust control approved by the Authorized Officer shall be applied to the access road during periods of high vehicle traffic especially during drilling and completion operations to reduce the amount of air-borne dust.

Residual Impacts: Soil erosion will occur on disturbed areas until the applicant successfully reclaims them.

Alternative – Off-site Production Facility B

This alternative would have the same impacts to soils as the proposed action but the impact would occur over a larger area. Pioneer Oil and Gas would have to disturb an additional area, 1.1-acres, for the off-site production facilities, install a surface pipeline, but would not have to construct a new access road as the proposed off-site production facility area is located immediately next to an existing crowned and ditched road the services residences in the area.

Water Quality

Proposed Action

Impacts: Sediment from soil erosion on disturbed surfaces associated with the proposed well site and access road may go into an ephemeral draw that runs into Matheson Creek. The CFO expects this impact to be minimal due to the small amount of surface disturbance associated with the project. In addition, the well site is located about one mile from Matheson Creek and is situated in a fairly flat area (see cover photo). There is a good vegetative barrier between the fill section of the well site and the ephemeral draw.

If Pioneer Oil and Gas successfully completes the proposed well as a producing oil and gas well, they would likely have to dispose of large volumes of produced water and get an NPDES permit for surface discharge. This discharge would likely flow into the ephemeral draw that runs into Matheson Creek and would affect the water quality and creek in the vicinity of Matheson Reservoir. Consequently, surface discharging produced water from this area would be problematic and it is likely that the produced water would have to be diverted around Matheson Creek and Matheson Reservoir via a surface pipeline. Eventually, the water would flow into the North Platte River.

Irreversible and irretrievable commitment of resources: The CFO does not expect any irreversible commitment of resources if the applicant employs the mitigation measures in the surface use plan of the APD. The CFO expects only a minimal increase in sediment load from erosion on disturbed surfaces associated with the proposed well pad over what is already occurring naturally in the area as the land form in this area is characterized by bare or sparsely vegetated rock outcrop.

Mitigation Measures: The surface use plan which accompanied the APD includes reclamation measures to minimize soil erosion. In addition, the applicant will line the reserve pit with a synthetic liner and install 500 feet of surface casing in the well to protect shallow ground water aquifers and springs that occur in the vicinity of the well. If the applicant successfully completes the well and needs to dispose of produced water, they would have to obtain the necessary NPDES permit from the Wyoming Department of Environmental Quality.

Residual Impacts: The CFO does not expect any residual impacts if the applicant applies the mitigation measures in the approved surface use plan and obtains the necessary produced water disposal permits.

Alternative – Off-site Production Facility B

The impacts of this alternative would be similar to the proposed action but there would be more disturbed surface available for erosion. The impacts of this alternative would still be minimal due to the small amount of disturbance, 3.8-acres. The off-site production facility is also located in a depression so any sediment from this area would tend to remain in the immediate vicinity of the facility (see photos #5 & 6). Surface discharging produced water from this area would also probably involve the construction of another surface pipeline. The surface discharge would not go into Matheson Creek but would go into an ephemeral draw that runs toward the northeast into an unnamed draw before going into the North Platte River.

Wildlife

Proposed Action & Off-site Production Facility B

Impacts: The project area falls within crucial big game winter/yearlong habitat. Impacts to big game species would most likely occur during the winter and early spring from increased human presence in the project area associated with construction and/or drilling activities. Likewise, workover/recompletion activities scheduled during the winter months when big game animals are most susceptible to stress-related mortality could have an adverse impact on those animals wintering near the project area by displacing them from preferred habitats to those habitats less favored.

In addition to direct habitat loss, the greatest impact on wildlife populations would be from displacement of wildlife species from preferred habitats as a result of increased level(s) of human activity (including vehicular traffic) and associated noise. The proposed well site is located approximately 500 feet north of State Highway 220 which is a major transportation corridor for travel

to the southwest portion of the State as well as major recreation areas such as Alcova Reservoir. There are future plans to expand this portion of Highway 220 to a four lane highway based on the current and projected traffic flow needs. Others possible effects to wildlife that cannot be controlled are the private lands developments such as numerous private dwelling currently located or possible to be built at some the future time in this area. The extent of this displacement is difficult to predict when one considers that response to noise and human presence varies from species to species as well as among individuals of the same species. Numerous studies have examined the effects of human presence on big game species (Klein 1974; Irwin and Peek 1979; Ward and Cupal 1979; MacArthur *et al* 1982; Brekke 1985) and it is commonly presumed that these effects are detrimental to individual species.

Impacts from the proposed action include both direct and indirect disturbances. Direct and indirect impacts include displacement, stress, and mortality (Sawyer et al. 2006). Habitat losses from both direct and indirect disturbances could reduce the carrying capacity of the range, potentially decreasing survival and reproduction of wildlife in the area (Sawyer et al. 2006). In addition to the avoidance response, an increased human presence intensifies the potential for wildlife-human interactions ranging from the harassment of wildlife to poaching and increased legal harvest. Likewise, increased traffic levels on existing access roads could increase the potential for wildlife-vehicle collisions. These collisions are most frequent where roads traverse areas commonly frequented by game species.

Direct habitat loss is commonly referred to as surface disturbance that results in the removal of vegetative cover due to surface disturbing activities (Sawyer et al. 2006). Indirect habitat loss may occur if increased human activity associated with production operations displace wildlife or alter habitat use patterns (Sawyer et al. 2006). Indirect habitat losses can be substantially larger than direct habitat losses (Sawyer et al. 2006). Generally speaking, construction, drilling, and completion activities within the project area would temporarily displace wildlife in the immediate vicinity (up to 0.5 miles) of such activities.

However, once these intensive activities have been completed, it is expected that the project area would experience some use by wildlife. However, such habitat may not be utilized to the same extent as it was prior to disturbance. It could take 10 to 20 years for some reclaimed areas to attain pre-disturbance shrub conditions and vegetation diversity. However, once all production operations have been terminated, existing facilities abandoned and removed, reclamation and reseeding operations are completed, and suitable vegetation has been re-established, wildlife would likely re-occupy all previously disturbed areas.

Surface disturbance and concomitant human intrusion(s) associated with additional oil/gas exploration and development activity within the project area could have a negative effect upon raptor breeding and/or nesting activities within the overall project area if these activities were allowed to proceed during the breeding/nesting season. Likewise workover/recompletion activities proposed during critical time periods in the breeding/nesting cycle could result in aborted breeding activity and/or nest abandonment. There are 2 documented raptor nests within ½ mile of the project area. Implementation of drilling and production operations could lead to the avoidance of these nest sites. Additionally, the project area is located Emigrant Gap flyway utilized by eagles wintering at the Jackson Canyon Eagle Roost (BLM 1992). The well location lies between the delineated North Platte River Feeding Concentration Area and the Jackson Canyon ACEC. The presence of the derricks on drilling rigs and/or work over/completion rigs at the well site result may result in an increase of collision associated mortalities, and increased activity during drilling and/or work over operations may result in a decrease in roost attendance.

Cumulative impacts to wildlife in addition to the proposed operations include disturbances by oil and gas development, livestock grazing, increased highway traffic and transmission/distribution lines. The above mentioned activities will also have some direct and indirect impacts to wildlife throughout the area. The cumulative impacts of these land uses are thought to have a moderate impact on wildlife in the area. Implementation of these operations in addition to the above mentioned disturbances will not lead to the need to list any BLM sensitive species.

Mitigation

With the Site Specific Stipulations to be applied for Wildlife, threats or impairments to these resources would be minimized. Seasonal stipulations utilizing protective buffers have been applied as mitigation for the project. The protective buffers associated with these stipulations may inadvertently provide protection for other sensitive species that otherwise are not afforded protection.

A seasonal stipulation would preclude drilling and/or surface use (wildlife disturbing activities) in crucial winter range during the period between November 1 and April 30 in order to protect wintering big game animals.

A seasonal stipulation has been applied to protect nesting raptors within the project area from February 1 through July 31 or until the young have fledged. This stipulation should minimize impacts and afford nesting raptors adequate protection throughout the nesting season.

To protect eagles utilizing the Emigrant Gap flyway to access the North Platte River Feeding Concentration Area and the Jackson Canyon Eagle Roost a seasonal stipulation to preclude wildlife disturbing activities within the flyway during the period of November 1 and March 31 in order to protect eagles. Additionally, the operator should monitor flyway activity, annually for the life of the well.

Any power lines associated with this project should be constructed to standards identified by the Avian Power Line Interaction Committee (APLIC 2006).

In the event of a dead or injured eagle or other raptor, the operator shall notify a BLM, Casper Field Office Wildlife Biologist within 24 hours of discovery at 307-261-7600.

Black-tailed prairie dog towns provide quality habitat for several BLM sensitive species. To minimize impacts to these species, operations should avoid black-tailed prairie dog towns should be avoided where feasible.

Livestock/Range Management

Proposed Action

Impacts: The surface disturbance from the proposed action will result in the loss of less than one (1) AUM. In the event Pioneer Oil and Gas successfully completes the well, this forage would be lost for the life of the well. In the event Pioneer Oil and Gas completes the well as a dry hole, they would reclaim the disturbed areas according to the surface use plan and the reclaimed areas would have some vegetation available for forage purposes in the near future, 2 to 3 years.

Irreversible and irretrievable commitment of resources: In the event Pioneer Oil and Gas Company successfully completes the proposed well, the well pad area and access road would be lost for the purpose of grazing livestock for the life of the well (> 20 years). This impact would be minimal since less than one AUM would be lost.

Mitigation Measures: All of the necessary mitigation measures to minimize impacts to range management are included in the surface use plan which accompanied the APD.

Residual Impacts: The CFO does not expect any residual impacts if the applicant properly reclaims the disturbed areas and returns the areas to productive use for grazing purposes.

Alternative – Offsite Production Facility B

This alternative would have essentially the same impact as the proposed action but a larger area would be lost for forage purposes in the event the well is successfully completed.

Vegetation

Proposed Action

Impacts: The applicant will strip off the vegetation from the well pad and access road areas; and as a result, weeds like Russian thistle, Canadian thistle, and other noxious weeds will likely invade the disturbed areas. In addition, the weeds will likely spread to areas that have not been disturbed if they are not properly controlled and may reduce the forage capacity of these areas. Based on the onsite inspections, this area has not been subjected to invasion of weeds or non-native plant species.

Irreversible and irretrievable commitment of resources: The newly constructed well pad and access road will likely be subject to weed infestations/invasion for the life of the project. If the well is a dry hole, weed invasion will be short term as the Pioneer Oil and Gas would reclaim disturbed lands per the surface use plan. If the well is successfully completed, weed invasion on disturbed areas would be for the productive life (> 20 years) of the well. The applicant will reseed all disturbed areas with a seed mixture containing native grass species to minimize the effect of introducing non-native species during reclamation activities.

Recommended Mitigation: The surface use plan contains the necessary mitigation measures for weed control and contains a seed mixture consisting of native grass species.

Residual Impacts: If the applicant controls the weeds and uses a seed mixture containing native grass species for reclamation purposes, there should be no residual impact.

Alternative – Offsite Production Facility B

This alternative would have the same effect as the proposed action but would occur over a larger area.

Visual Resources

Proposed Action

Impacts: The well pad and access road will create geometric shapes in the landscape which are not characteristic of the land forms in the area. The proposed action is located in an area which is readily visible to the casual observer. Please see Appendix A for additional discussion on impacts to VRM.

Irreversible and irretrievable commitment of resources: Under a Class III objective, the level of change to the characteristic landscape is allowed to be moderate. The change may attract the attention but should not dominate the view of the casual observer.

Recommended Mitigation: The surface use plan of the APD contains some of the necessary mitigation measures to minimize impacts to visual resources in the event Pioneer Oil and Gas

completes the well has a producing oil well including a measure to paint all permanent above-ground structures not subject to safety requirements an environmental color like Desert Brown (10YR 6/3 on the environmental paint color chart). The CFO recommends the following additional mitigation measures to minimize impacts to visual resources in the event the well is successfully completed:

- (1) The applicant should install low profile production facilities including storage tanks and a horizontal heater treater if possible.
- (2) The applicant should plant 15 to 25 junipers or other appropriate native species between the highway and well site to provide a vegetative screen.

In the event the well is a dry hole, Pioneer Oil and Gas shall close the reserve pit within 6-months along with reclaiming the well pad and access road.

Residual Impacts: The CFO does not expect any residual impacts if the applicant applies the above measures.

Alternative – Offsite Production Facility B

The proposed action would meet the Class III VRM requirements without any additional mitigation measures if Pioneer Oil and Gas locates the production facilities offsite at this location. However, this alternative may not be feasible as it is completely dependent on Pioneer Oil and Gas obtaining the necessary WYDOT permit.

Air Quality

Proposed Action

Impacts: Air quality would likely be impacted short term by emissions associated with well pad and access road maintenance/construction activities along with emissions associated with drilling and completion operations. Vehicular traffic will likely generate air-borne dust during well pad and access road construction as well as during drilling and completion operations

The proposed well will encounter rock formations which are known to contain H₂S in low concentrations. In the event Pioneer Oil and Gas completes the well as a producing oil well, low concentrations of H₂S may be released as vapors from storage tanks or as vapors from produced water stored in pits or ponds associated with an NPDES permit. If the well is completed, the residents in the area could be subjected to breathing air with low concentrations of H₂S and the smell of rotten eggs. Similar conditions occur in the towns of Powder River, Midwest, and Edgerton, Wyoming.

In the event Pioneer Oil and Gas Company completes the proposed well for production, they should not adversely impact air quality as long as they take proper measures to control air contaminant emissions from production facilities and obtain the necessary permits from the Department of Environment Quality.

Irreversible and irretrievable commitment of resources: In the event the well is completed as a commercial sour oil well, the habitants in the area would likely be subjected to periods of smelling a rotten egg odor and breathing air with low concentrations of H₂S. This odor can cause headaches and eye-irritation.

Mitigation measures: In the event the well is completed as a sour oil well, the applicant should install vapor recovery units on their storage tanks and flare the vapors with a continuous ignition system. This measure should minimize H₂S emissions and relieve some of the problems associated with the odor of H₂S for the residents in the area.

Residual impacts: No residual impacts are expected to occur if the applicant installs the vapor recovery-flare system when the well is completed for production.

Alternative – Off-site Production Facility B

This alternative would have the same impact as the proposed action but source of the H₂S vapors associated with the production facilities would be located closer to residences down wind.

CUMULATIVE IMPACTS

Cumulative impacts are impacts which are likely to occur due to the proposed action in combination with other ongoing activities in the area, recently constructed projects in the area, and projects which will likely be implemented in the area in the near future.

Presently, there are no oil fields located in the vicinity of the proposed action. If Pioneer Oil and Gas successfully completes the proposed well more development would likely occur. Since their oil and gas lease is restrictive and only has about 200 acres where surface development could occur, the amount of new access roads and well pads would be limited. The access roads would likely follow existing roads and future development would involve directional drilling from a handful of well pads.

WYDOT plans on expanding Highway 220 from its present size to a four lane highway in this area. The area is also experiencing residential growth and there are numerous residences and their associated roads and power lines within a mile of the proposed action.

The CFO does not know of any other ongoing present activities or proposed future activities in the vicinity of the proposed action.

Scoping & Public Participation

On November 6, 2007, the CFO sent out a scoping letter (see Appendix C) to all of the landowners and residences within a ½-mile radius of the proposed action. The scoping letter described the action and asked for any comments/input by December 15th, 2007. In addition, the CFO posted the APD for public review on July 27, 2007, according to Onshore Oil and Gas Order No. 1. The CFO did not receive any comments or inputs on this issue.

PERSONS/AGENCIES CONSULTED

Chris Arthur - BLM Archeologist, VRM
Jim Wright - BLM Wildlife Biologist
Stacie Scott – Landowner
Phil Stump – State Engineer's Office
Brian Kelly – U. S. Fish and Wildlife Service

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Maps

- Map 1: Topographic Map showing Well Site
- Map 2: Soil Map showing proposed action and alternative production site B
- Map 3: Wildlife Information